

WHAT IS CLAIMED IS:

1. A cooling system with refrigerant for air conditioning and engine parts, comprising:

a compressor,

a high pressure circuit filled with the refrigerant; and

a low pressure circuit filled with the refrigerant too;

wherein, the high pressure circuit further comprises a condenser, the low pressure circuit further comprises an evaporator and a heat exchanger, the heat exchanger at an interior thereof is provided with a refrigerant passage and a fluid passage, which enters the engine, with the two passages next to each other and contacting with each other and at an exterior thereof includes a refrigerant inlet, a refrigerant outlet, a fluid entrance to the engine and a fluid exit from the engine;

whereby, once the compressor is in a state of running, the refrigerant in the low pressure circuit passes through the evaporator and enters the refrigerant passage in the engine via a connecting pipe in the low pressure circuit and the refrigerant inlet and then flows out from the heat exchanger via the refrigerant outlet; a fluid for being cooled flows into the fluid passage via the fluid entrance and flows out from the fluid exit before reaching an engine body; and temperature of the fluid during entering fluid passage is higher than the refrigerant in the refrigerant passage and heat in the fluid transmits the refrigerant between a wall of the fluid passage and a wall of the refrigerant passage.

2. The cooling system with refrigerant as defined in claim 1, wherein the low pressure circuit further comprises a through pipe parallel to the heat exchanger to allow at least part of the refrigerant not passing through the heat exchanger during circulating in the cooling system.

3. The cooling system with refrigerant as defined in claim 2, wherein the connecting pipe is provided with a valve adjacent to the refrigerant inlet of the heat

exchanger to control the refrigerant passing through the heat exchanger.

4. The cooling system with refrigerant as defined in claim 2, wherein the connecting pipe is provided with a valve adjacent to the refrigerant outlet of the heat exchanger to control the refrigerant passing through the heat exchanger.

5 5. The cooling system with refrigerant as defined in claim 2, wherein a conjunction of at least a connecting pipe and the through pipe is provided with a one to two single switch valve to control the refrigerant passing through the heat exchanger or the through pipe only.

10 6. The cooling system with refrigerant as defined in claim 1, wherein the fluid in the engine is intake air.

7. The cooling system with refrigerant as defined in claim 1, wherein the fluid in the engine is engine oil.

15 8. The cooling system with refrigerant as defined in claim 1, further comprises a water spray cooling device, which includes a water trough, a water delivering pipeline, a water pump and a nozzle, and the water nozzle is disposed in front of a heat dissipating water box of a water cooling type engine and face the heat dissipating water box.

20 9. The cooling system with refrigerant as defined in claim 1, further comprises a water spray cooling device, which includes a water trough, a water delivering pipeline, a water pump, a nozzle, a logic control unit and a temperature sensor, with the water pump receiving an instruction of the logic control unit to pump or not pump water to the nozzle and the instruction of pumping water being based on if temperature data transmitted by the temperature sensor being greater than a preset value, wherein the nozzle is disposed in front of a heat dissipating water box of a
25 water cooling type engine and face the heat dissipating water box.

10. The cooling system with refrigerant as defined in claim 1, further comprises a water spray cooling device, which includes a water trough, a water delivering pipeline, a water pump and a nozzle, wherein the nozzle is disposed in front of and faces the heat dissipating fins for oil.

5 11. The cooling system with refrigerant as defined in claim 1, further comprises a water spray cooling device, which includes a water trough, a water delivering pipeline, a water pump, a nozzle, a logic control unit and a temperature sensor, with the water pump receiving an instruction of the logic control unit to pump or not pump
10 water to the nozzle and the instruction of pumping water being based on if temperature data transmitted by the temperature sensor being greater than a preset value, wherein the nozzle is disposed in front of and faces heat dissipating fins for oil.